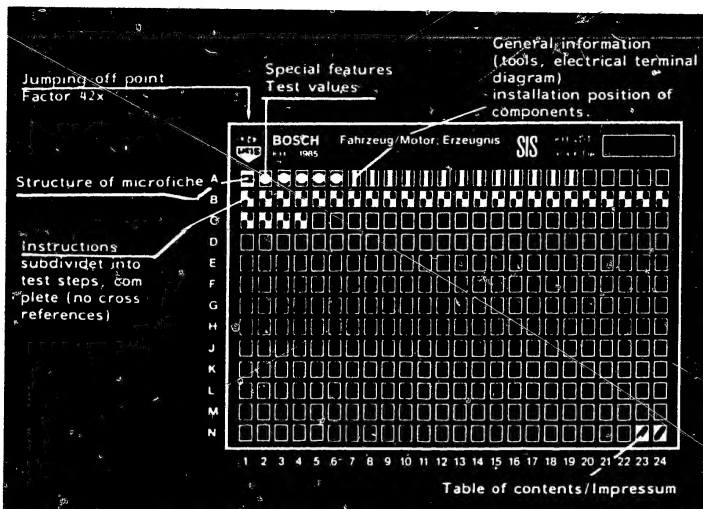
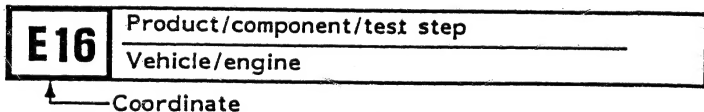


Structure of microfiche



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

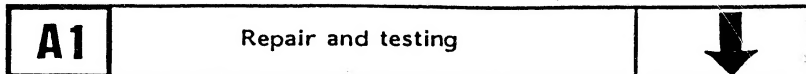


3. Limits of section



4. References to relevant test steps in test specifications; coordinate e.g. C6

C6



1. Special features:

- Slipringless generator
- Cannot be tested on conventional test benches since rotor is mounted on external drive.
- Generator is installed in railroad vehicles.

Generator 0 122 700 002 was used in preparing these instructions.

For test instructions see VDT-WFE 315/101, Ed. 1.

This microcard supersedes instructions VDT-WJE 315/5 of 6.1970.

A2

Special features

Generator 0 122 700 .. (U3)



2. Test specifications

2.1 Resistance under exciter diode carrier	140 ... 170 Ω	B5
2.2 Instrument transformer resistance	135 ... 165 Ω	B6
2.3 Pole body resistance (excitation winding)	3.4 ... 4.1 Ω	B8
2.4 Stator winding resistance Measuring points between the phases	0.0088 + 0.0009 Ω	B11

A3

Test specifications

Generator 0 122 700 .. (U3)



3. Test specifications - mechanical:

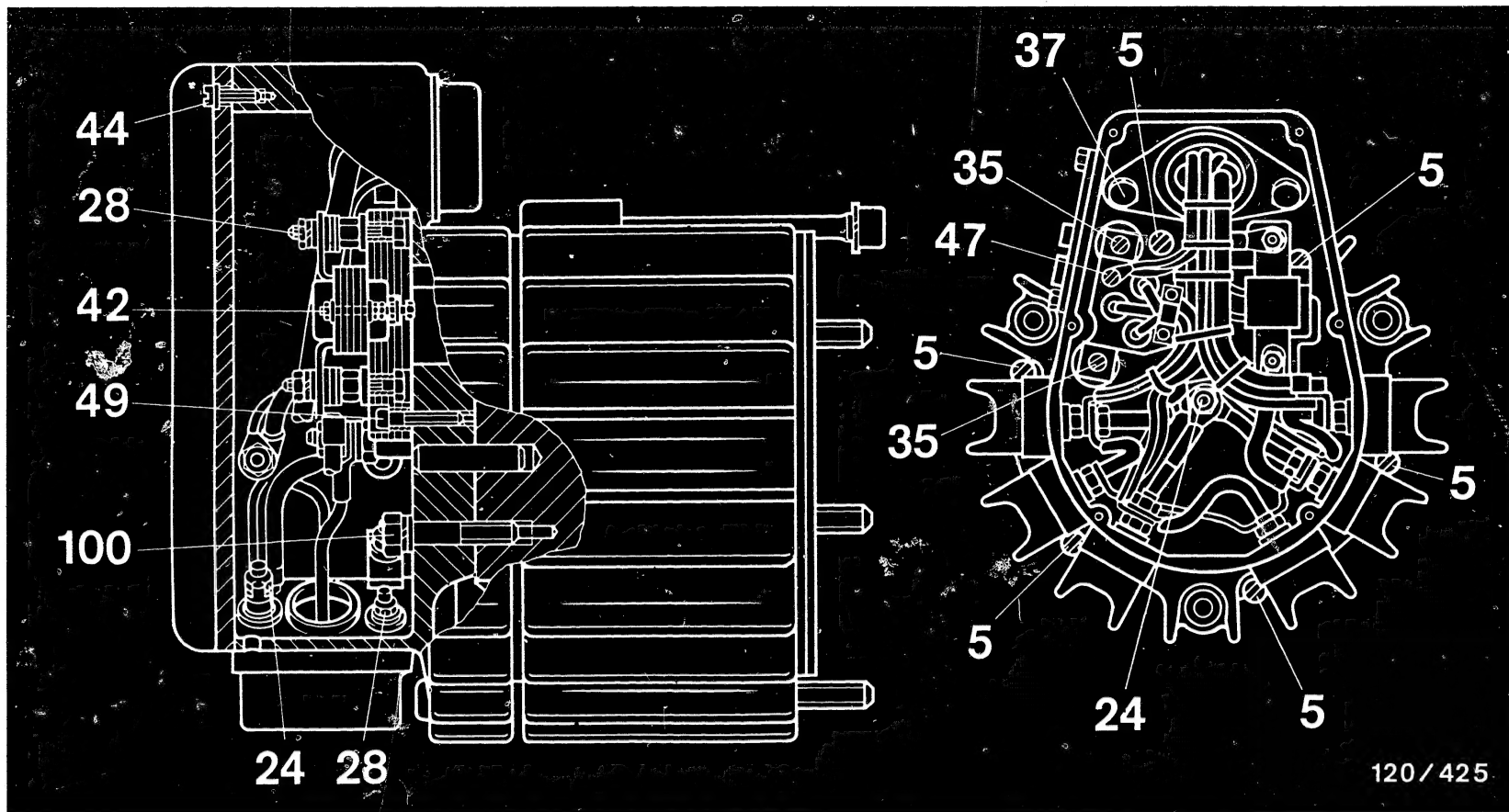
Air gap between stator and rotor 1.55 - 1.65 mm

Air gap between inner pole and rotor 1.50 - 1.60 mm

True-running error on O.D. of rotor 0.05 mm

Bind electric leads tight with hemp sail twine or self-locking cable holder straps (safeguard against sagging down and rubbing).





3.1 Tightening torques:

Item 5/49	7.2 ... 9.7 Nm	Item 37	10 ... 13 Nm
Item 24 M8	10 ... 13 Nm	Item 42	0.45 ... 0.6 Nm
Item 28	4.1 ... 5.5 Nm	Item 47	2.1 ... 2.8 Nm
Item 35/44	2.1 ... 2.8 Nm	Item 100	49 ... 65 Nm

A5

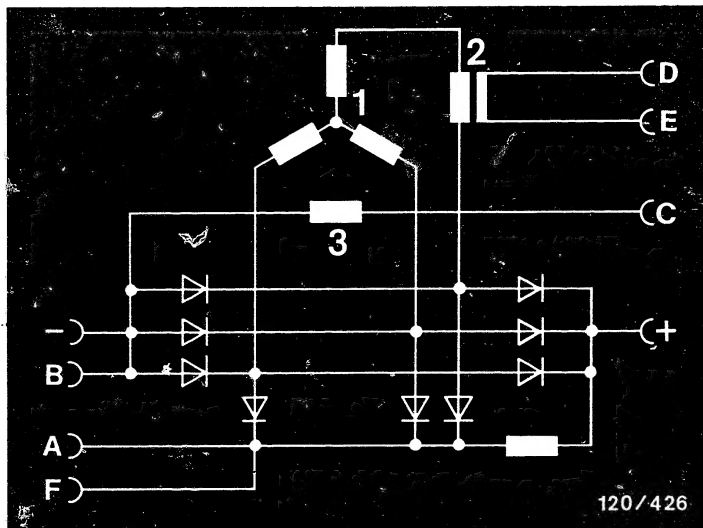
Test specifications
Generator 0 122 700 .. (U3)



A6

Test specifications
Generator 0 122 700 .. (U3)





- 1 = Stator winding
- 2 = Instrument transformer
- 3 = Pole body (excitation winding)

4. Circuit diagram

Generators U3 (RL) 28 V 130A16
 U3 (RL) 28 V 150A15

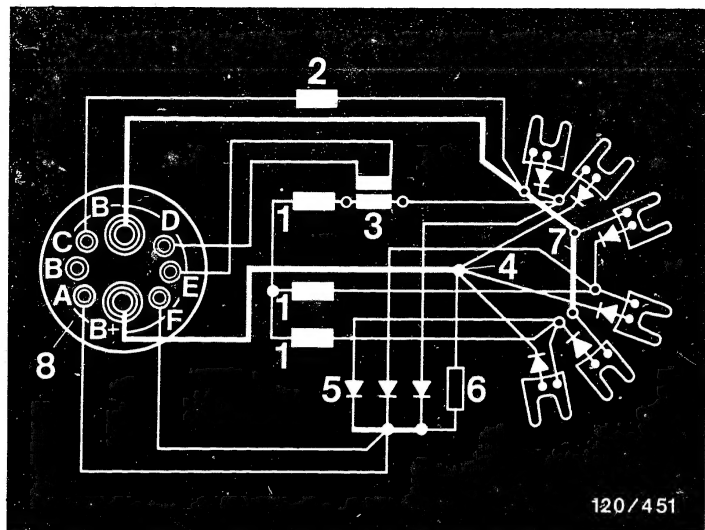
120/426

A7

Circuit diagram

Generator 0 122 700 .. (U3)





120 / 451

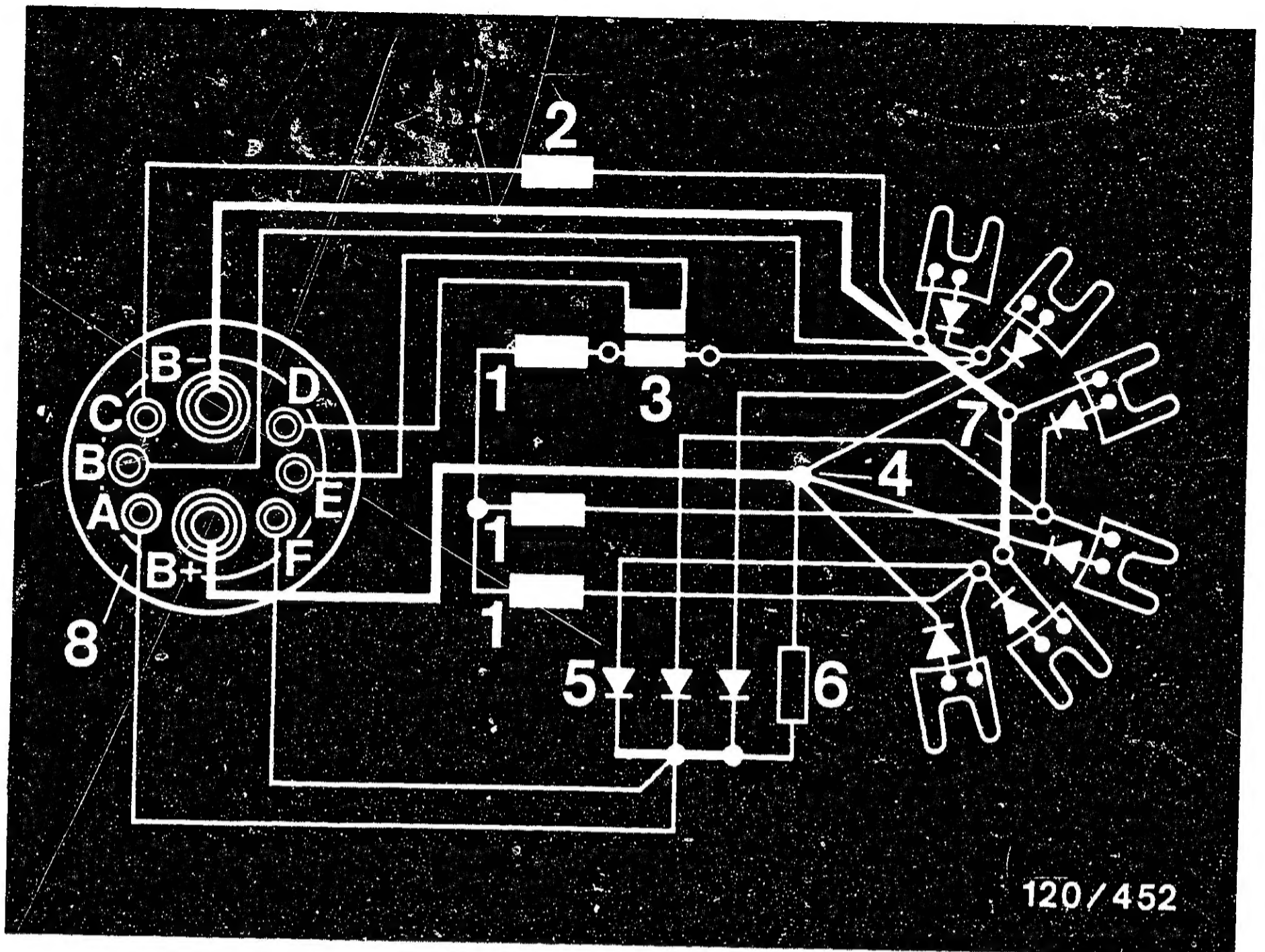
- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Terminal stud (positive) | 8 = 8-pin socket to regulator |

4.1 Wiring diagram for generator 0 122 700 001

A8

Dismantling and testing generator
Generator 0 122 700 .. (U3)





120/452

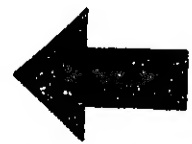
- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Terminal stud (positive) | 8 = 8-pin socket to regulator |

4.2 Wiring diagram for generators 0 122 700 002 and .. 003

A9

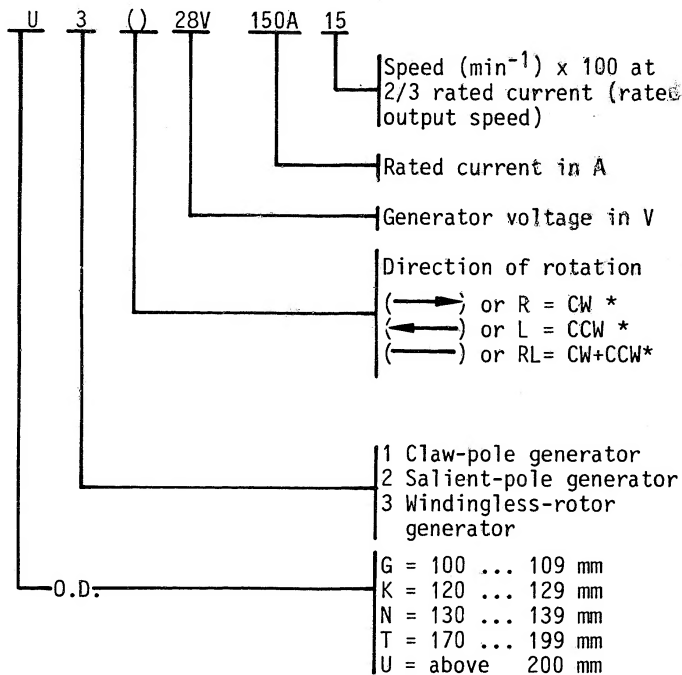
Dismantling and testing generator

Generator 0 122 700 .. (U3)



5. General information

Explanation of type code on generator (old)



* CW = Clockwise
CCW = Counterclockwise

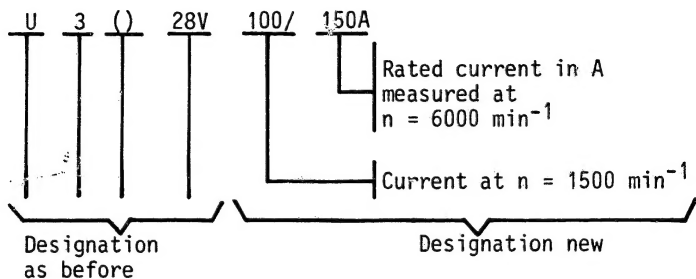
A10

General information

Generator 0 122 700 .. (U3)



Explanation of type code on generator (new)
as of beginning of 1983



A11

General information

Generator 0 122 700 .. (U3)



Cleaning the parts

Observe the following safety regulations:

Decree on Working with Combustible Liquids (Vbf) issued by the Federal Ministry of Labor (BmA).

Safety Rules for Handling Chlorinated Hydrocarbons

for the workshop ZH1/222

for the employee ZH1/119

issued by the Central Association of German Employers' Liability Insurance Associations (Central Association for Accident Prevention and Industrial Medicine)
Langwartweg 103, 5300 Bonn 5.

Note:

Generator 0 122 700 002 was used in preparing these repair instructions.

The various versions of generator should be taken from the corresponding service-parts microcards.

A12

General information

Generator 0 122 700 .. (U3)



6. Test equipment, tools, adhesives, lubricants

6.1 Test equipment

Test panel	or	EFAW 81 KDAW 9984	0 681 169 013
Transformer panel	or	EFAW 82 KDAW 9985	0 681 169 014
Insulation tester or test prods		EFAW 84 KDAW 9983	(included with EFAW 81 or KDAW 9984)
Alternator tester	or	EFAW 192 WPG 012.00	0 681 101 403 0 684 201 200
Electrics tester		ETE 014.00	0 684 101 400

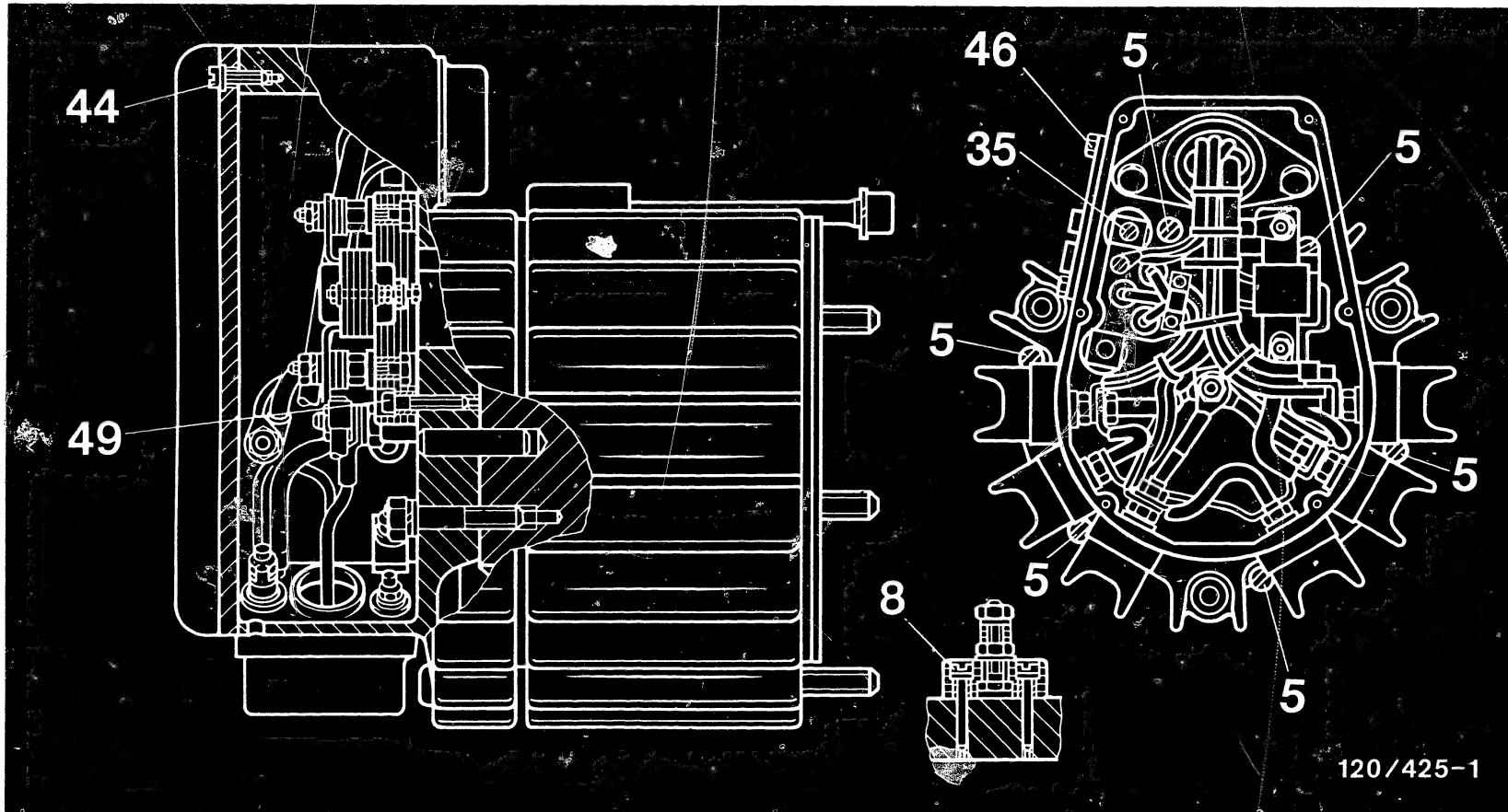
6.2 Tools

Torque wrench	commercially available
---------------	------------------------

6.3 Adhesives, fasteners

Adhesive KK57 v 9	5 703 156 103
Hemp cord or self-locking cable retaining straps	commercially available





6.4 Lubricants and lubrication tips

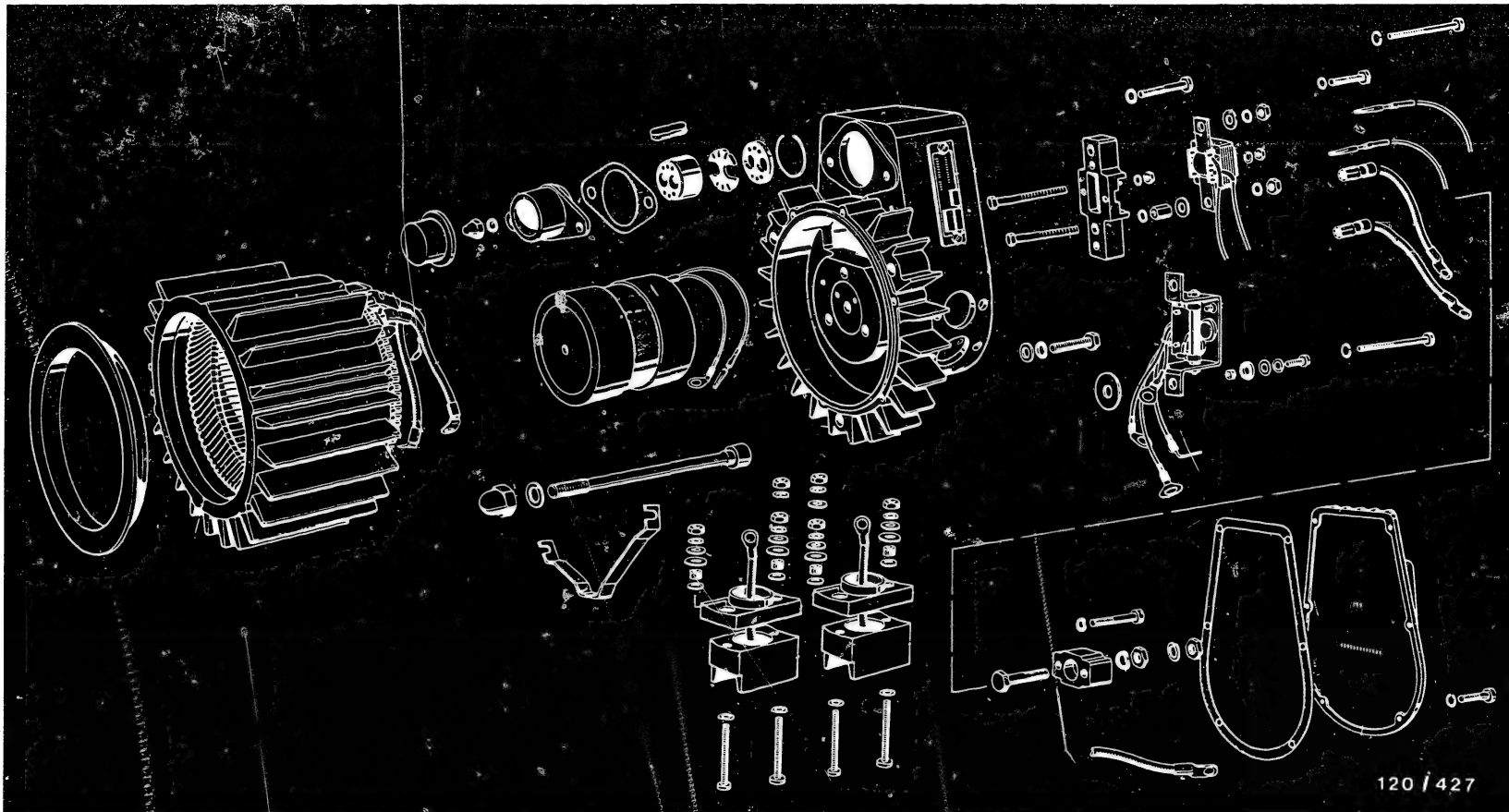
Grease threaded holes for screws of items 5,8,35,44,46,49 with Ft 70v1.
 Pack countersinks of items 8 and 49 as far as screw head height with
 sealing putty

5 700 040 000

5 703 241 000

A14	Test eqpt., tools, lubricants	↔
	Generator 0 122 700 .. (U3)	

A15	Test eqpt., tools, lubricants	↔
	Generator 0 122 700 .. (U3)	



7. Exploded view of generator U3 (RL) 28V150A15 (0 122 700 001,002)

A16

Exploded views

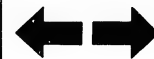
Generator 0 122 700 .. (U3)

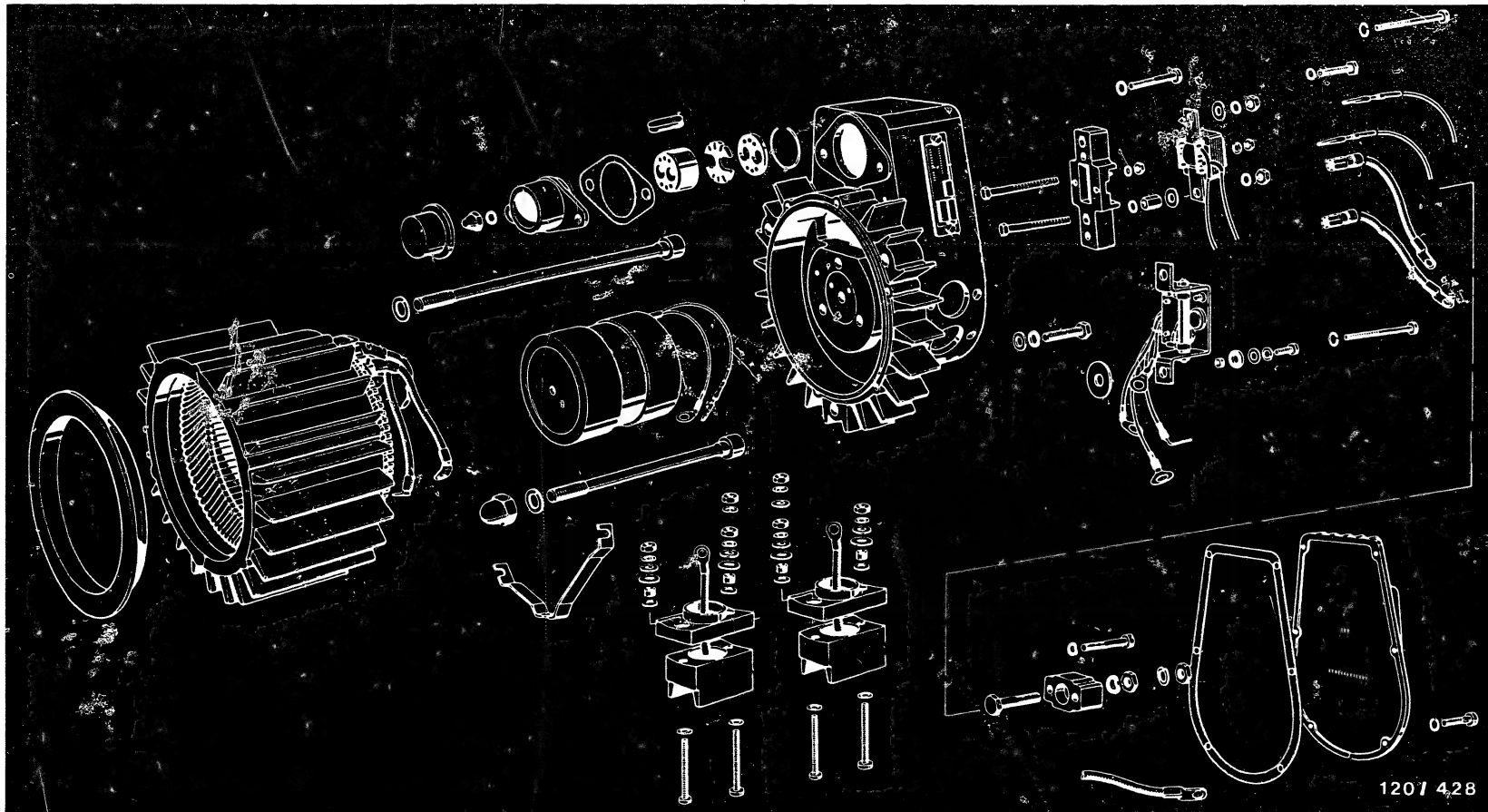


A17

Exploded views

Generator 0 122 700 .. (U3)

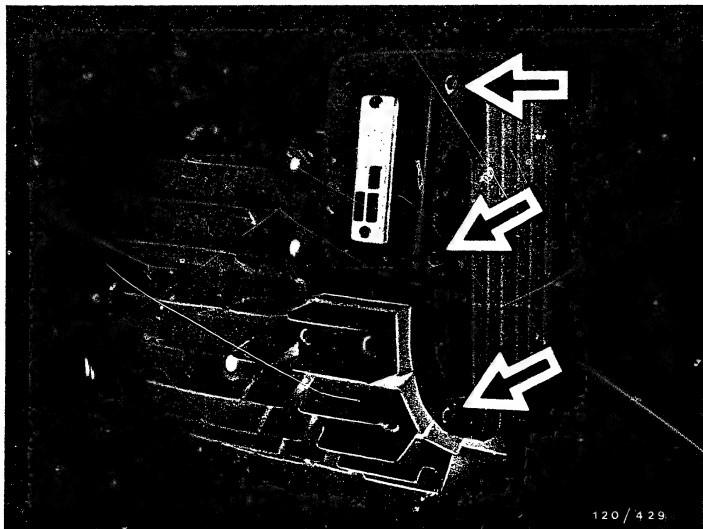




7.1 Exploded view of generator U3 (RL) 28V130A16 (0 122 700 003)

A18	Exploded view	
	Generator 0 122 700 .. (U3)	

A19	Exploded view	
	Generator 0 122 700 .. (U3)	



8. Dismantling the generator and testing the parts

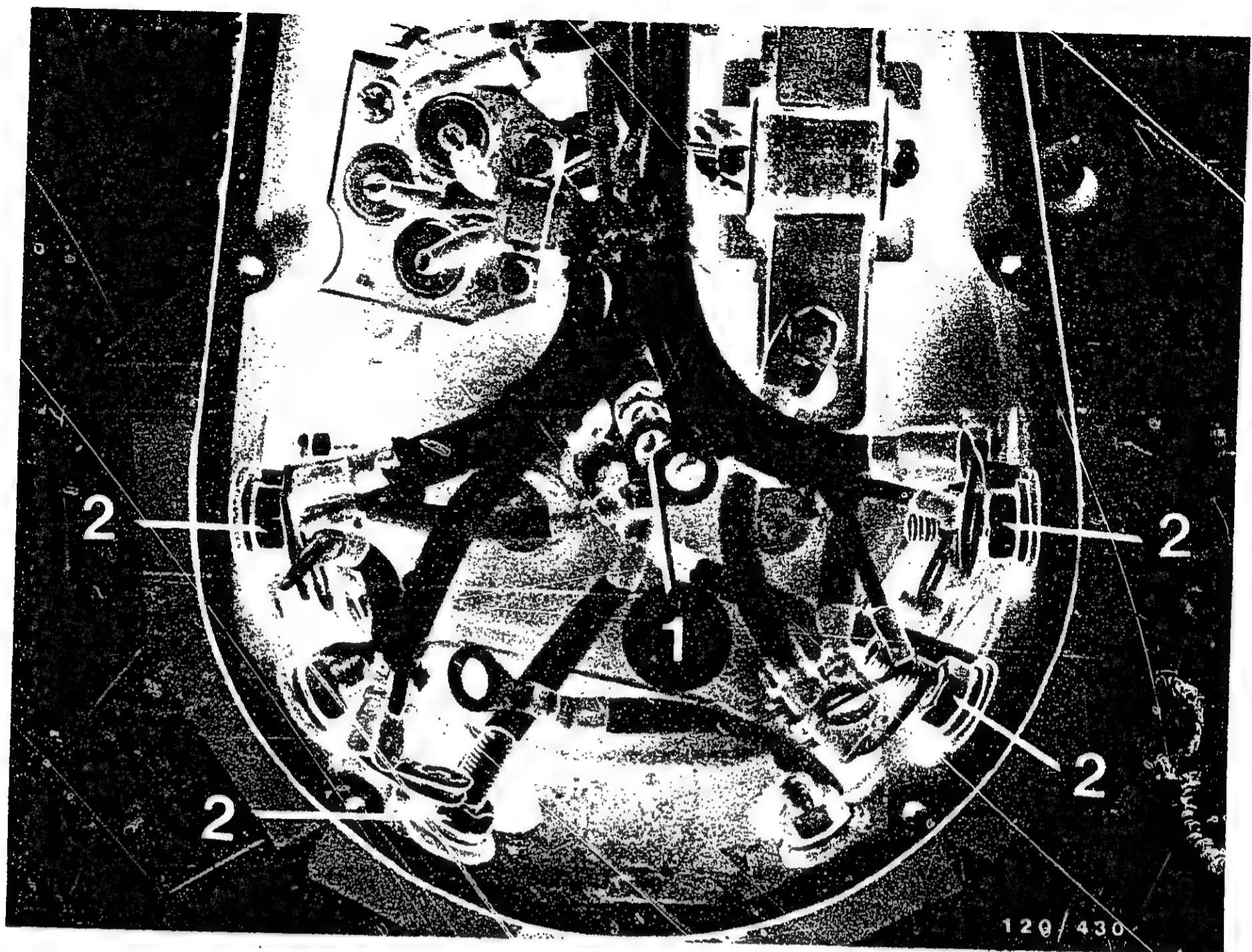
Loosen closing cover fastening screws (see picture, arrows).

Carefully remove closing cover.

B1

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





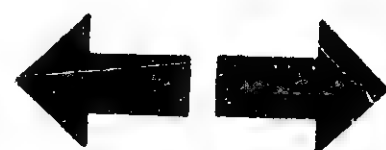
1 = Terminal stud, positive 2 = Terminal stud, phase

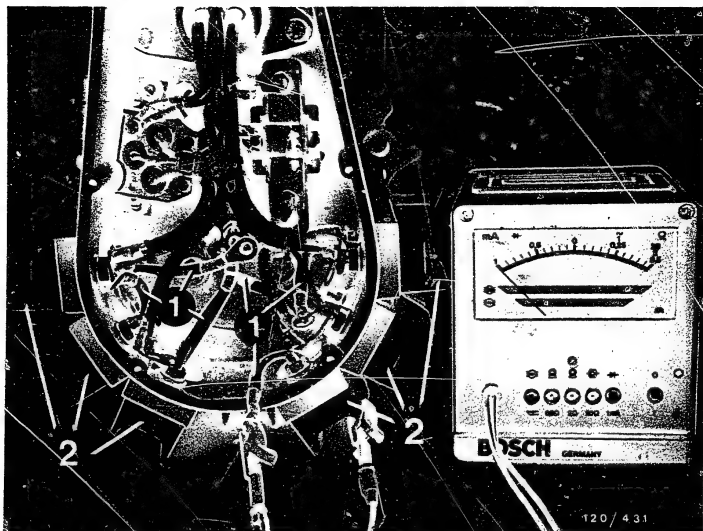
Loosen all connections at positive and phase terminal studs (see picture).

B2

Dismantling generator, testing parts

Generator 0 122 700 ..(U3)





- 1 = Power diodes connecting lead
2 = Heat sink with power diode

8.1 Testing the power diodes in the heat sink

Test power diodes in forward and reverse directions with alternator tester WPG 012.00. Note switch position on tester.

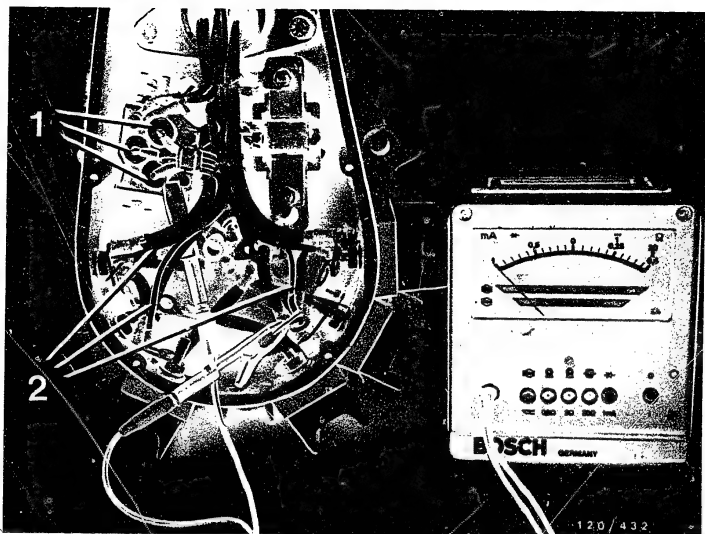
Measuring points: Heat sink and diode connecting lead (see picture).

Diode is O.K. if the pointer of the tester is in the green zone when measuring.

B3

Dismantling generator, testing parts
Generator 0 122 700..(U3)





1 = Exciter diodes

2 = Connecting leads

8.2 Testing the exciter diodes

Test exciter diodes in forward and reverse directions with alternator tester WPG 012.00. Note switch position on tester.

Measuring points: Exciter-diode carrier and exciter diodes connecting lead (see picture)

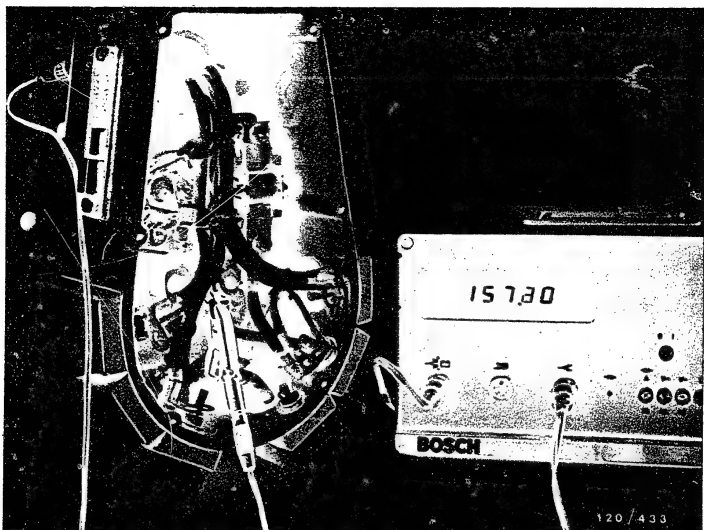
Exciter diodes are O.K. if the pointer of the tester is in the green zone when measuring.

B4

Dismantling generator, testing parts

Generator 0 122 700..(U3)





8.3 Testing the resistor under the exciter-diode carrier

Test resistor with electric tester ETE 014.00.

Measuring points: Free lead of resistor and socket A or F on plug connector.

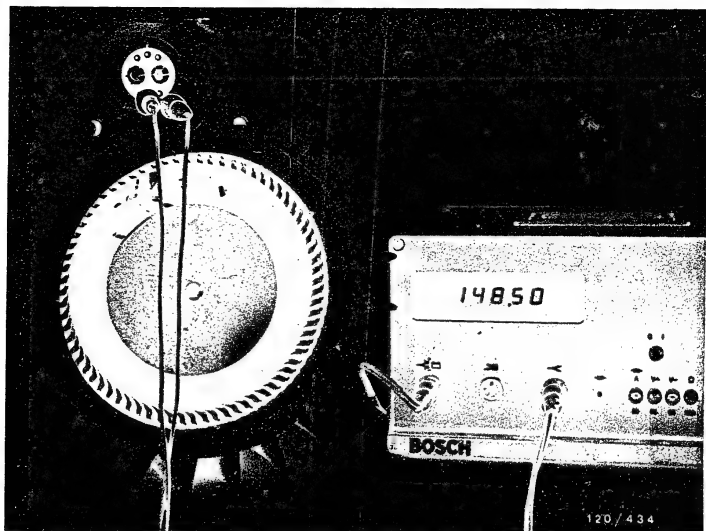
Resistance should be: 140 ... 170 Ω

If resistor defective, replace complete exciter-diode bracket.

B5

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





8.4 Testing the instrument transformer (resistance)

Connect test prods of electric tester ETE 014.00 at sockets D and E of the 8-pin connection socket.

Resistance should be: 135 ... 165 Ω

B6

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





Testing the instrument transformer (short circuit to ground)

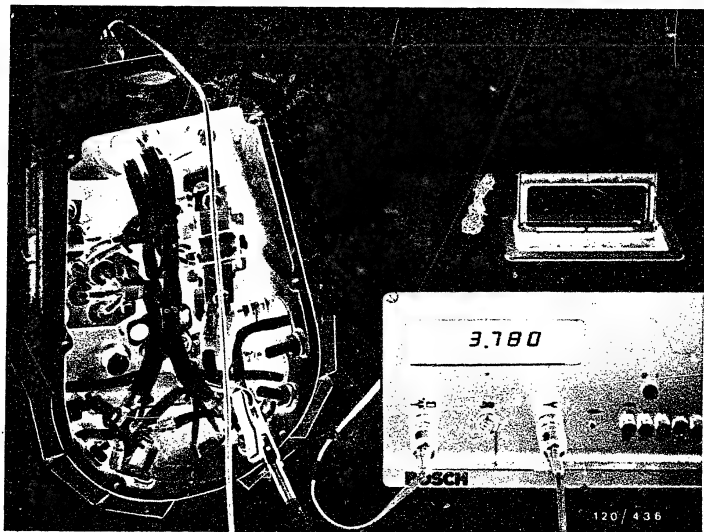
While installed, test instrument transformer for short circuit to ground with test prods EFAW 84 or KDAW 9983 at sockets D or E of 8-pin connection socket to generator housing.

Test voltage: 80 V a.c.

B7

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





8.5 Testing the pole body (excitation winding)

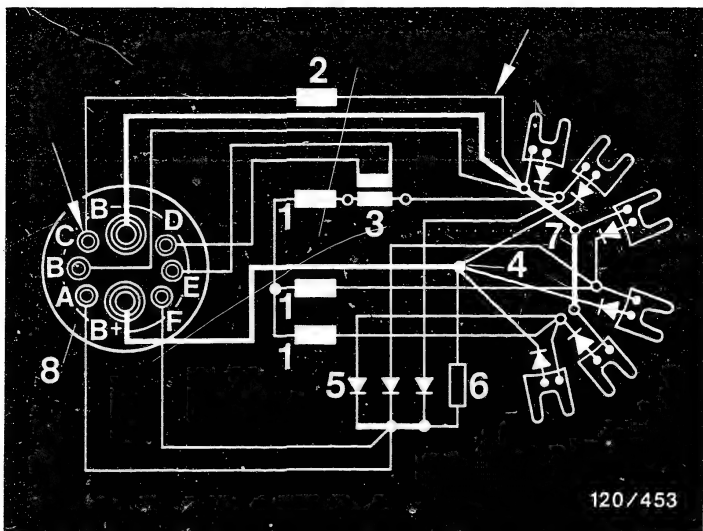
While installed, test the resistance of the pole body with winding (excitation winding) using electric tester ETE 014.00.

B8

Dismantling generator, testing parts

Generator 0 122 700 ..(U3)





120/453

- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Terminal stud (positive) | 8 = 8-pin socket to regulator |

Measuring points: Socket C and free connection of excitation winding (see picture, arrows)

Resistance should be: 3.4 ... 4.1 Ω

B9

Dismantling generator, testing parts

Generator 0 122 700 ..(U3)





Testing the pole body (excitation winding) for short circuit to ground

While installed, test the excitation winding for short circuit to ground using test prods EFAW 84 or KDAW 9983.

Measuring points: Terminal C at 8-pin socket and generator housing (see picture).

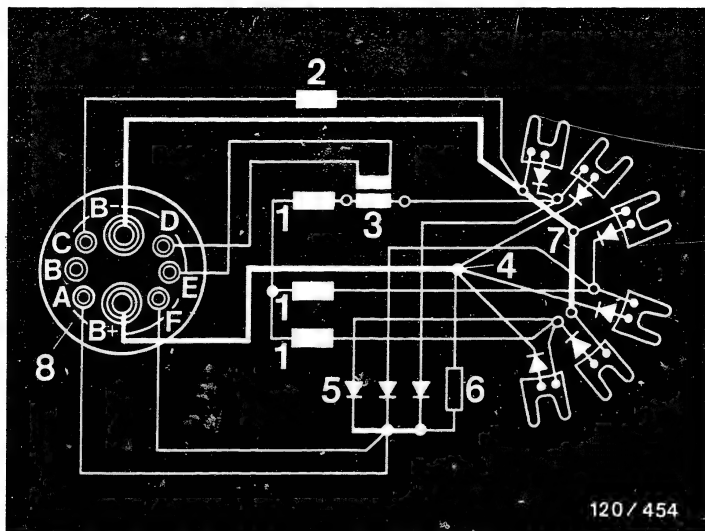
Test voltage: 80 V a.c.

B 10

Dismantling generator, testing parts

Generator 0 122 700 ..(U3)





120 / 454

8.6 Testing the stator winding (resistance)

Note:

The test is to be evaluated as a continuity test (yes/no) since the very small resistance of the stator winding cannot be measured precisely.

Measuring equipment: Electric tester ETE 014.00

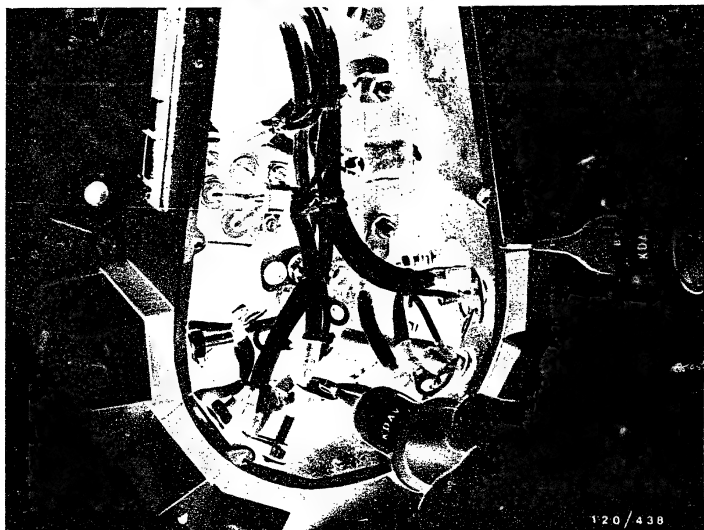
Measuring points: Between the free phase connections

Resistance per phase: 0.0088 - 0.0097 Ω

Note:

Only 2 phases in each case can be measured together.





Testing the stator winding (short circuit to ground)

While installed, test the stator winding for circuit to ground using test prods EFAW 84 or KDAW 9988.

Measuring points: Free connection of stator winding and generator housing (see picture).

Test voltage: 80 V a.c.

B 12

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)



9. Cleaning the parts

Benzene, tri- or perchloroethylene are approved for washing out automotive electric components. Handle both cleaning agents carefully in accordance with their degree of danger.

Benzene, acetone and ethanol are combustible liquids and, when mixed with air, represent an explosion hazard. Washing may be performed only in special bowls or containers with special lids, so that, if the liquid ignites, the lid closes automatically, smothering the fire. An extractor system must be provided for large washing containers (as of 500 x 500 mm).

Tri and per are liquids whose vapors have a narcotic effect and are hazardous to health if inhaled over long periods. Tri vapors are heavier than air and, therefore, there is increased danger at floor level. Wear protective goggles and gloves when washing.

Cleaning operations with tri at regular intervals or continuously may be performed only in special containers with the extractor system on. When washing components, avoid bending over the tri tank.

Observe the following safety regulations:

Decree on Working with Combustible Liquids (Vbf) issued by the Federal Ministry of Labor (BmA).

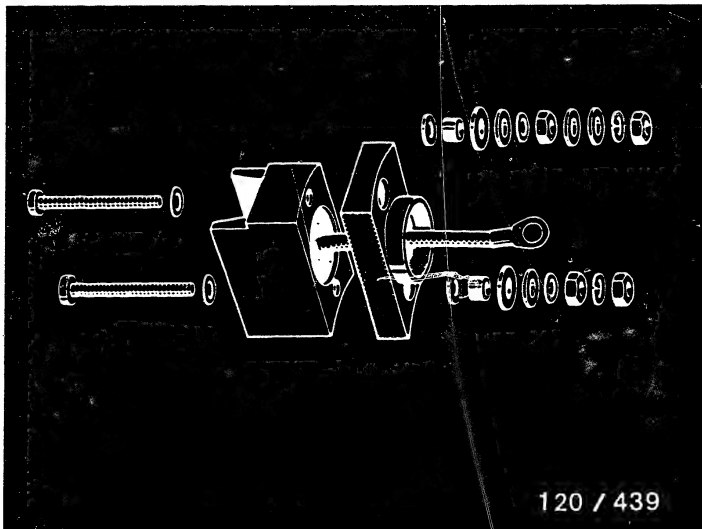
Safety Rules for Handling Chlorinated Hydrocarbons:

for the workshop	ZH 1/222
for the employee	ZH 1/119

issued by the Central Association of German Employers' Liability Insurance Associations (Central Association for Accident Prevention and Industrial Medicine)
Langwartweg 103, 5300 Bonn 5.

In countries outside the Federal Republic of Germany, observe the corresponding local regulations.





10. Replacing the heat sink with power diode (positive diode)

Loosen heat sink fastening nuts and remove.

Remove rubber insulation part and install on new heat sink.

Install insulating washers and bushings on new heat sink.

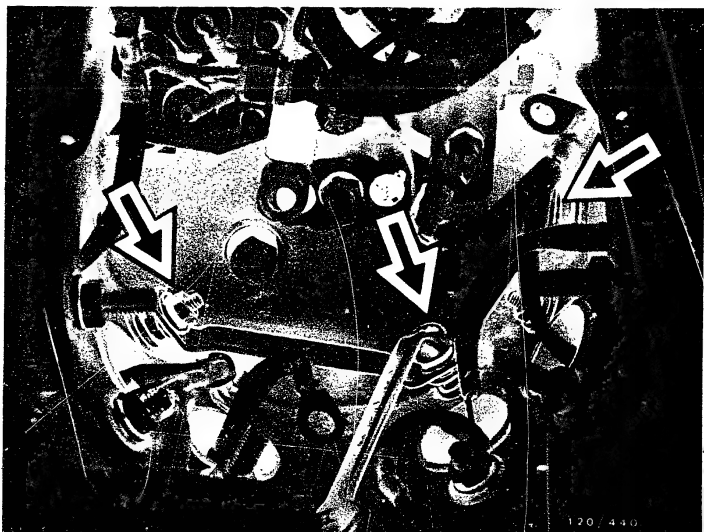
Mount new heat sink in generator housing. Using electronics tester ETE 014.00, test insulation resistance of heat sink to generator housing.

Resistance should be: $\infty\Omega$

B14

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





Replacing the heat sink with power diode (negative diode)

Remove bus bar (see picture, arrows).

Loosen heat sink fastening nuts and remove. Insert new heat sink with insulating material in generator housing and fasten (tightening torque 4.1...5.5 Nm). Using electric tester ETE 014.00, measure insulation resistance of heat sink to generator housing. Resistance should be: $\infty\Omega$.

Install bus bar. Make sure that there are plain washers on both sides of the bus bar. If necessary, use further shims so that the bus bar is not bent. Tightening torque for fastening nut: 4.1...5.5 Nm.

B15

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





10.1 Replacing the exciter-diode carrier

If an exciter diode is defective, replace the entire exciter-diode bracket.

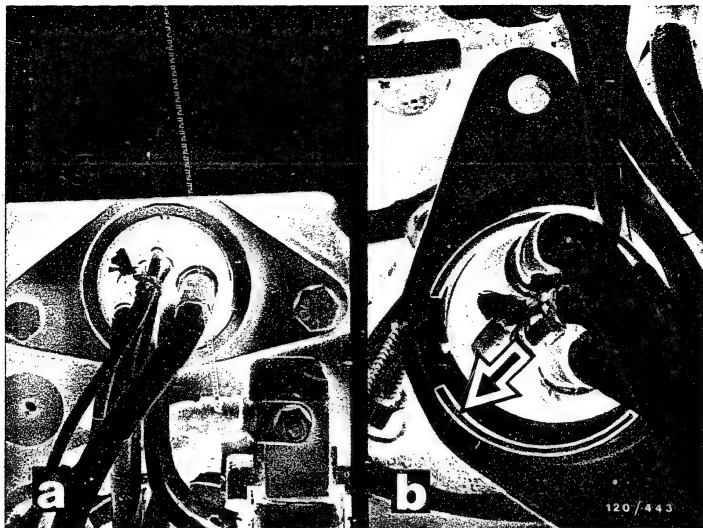
Tightening torque for fastening screws (see picture, arrows) 2.1 ... 2.8 Nm

B 16

Dismantling generator, testing parts

Generator 0 122 700 ..(U3)





10.2 Unscrewing and dismantling the socket

Unscrew socket fastening screws.

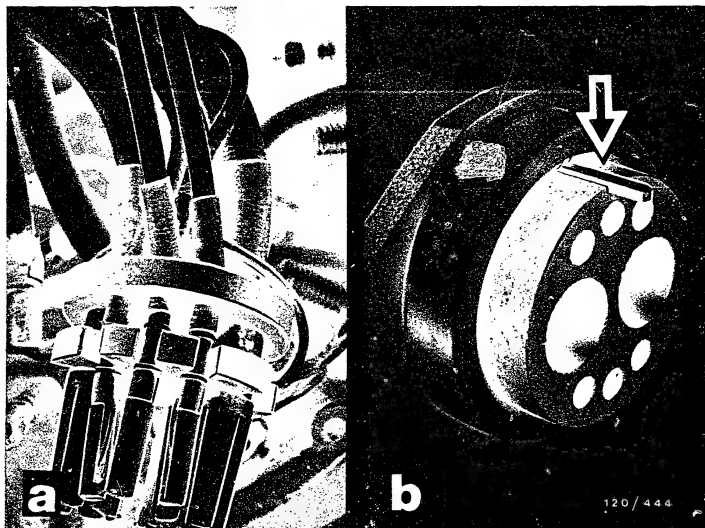
Using suitable tool, remove retainer (see picture b, arrow) and dismantle socket.

Pull apart plug insert and plug base. To the extent necessary, remove plug receptacles.

B17

Dismantling generator, testing parts
Generator 0 122 700 ..(U3)





Installing the socket

Attach the receptacles (see picture a). Push together the plug inserts and plug base.

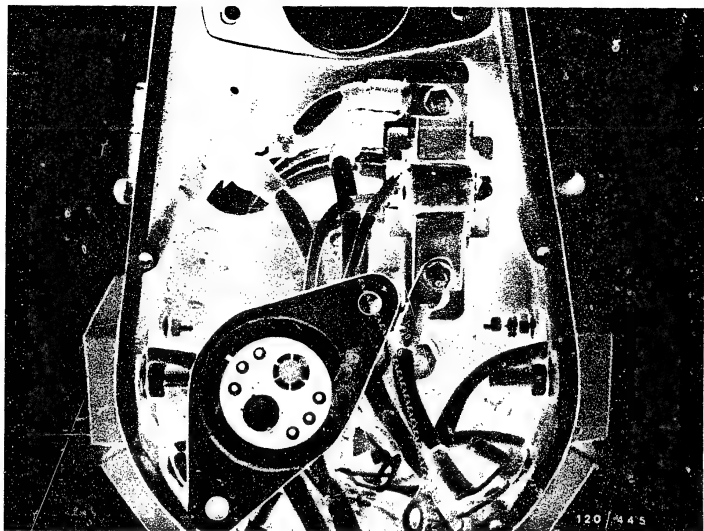
When assembling, make sure that the parallel key (see picture b, arrow) is introduced into the groove in the socket. Secure plug inserts and plug base in socket with retainer.

B 18

Dismantling generator, testing parts

Generator 0 122 700 ..(U3)





10.3 Replacing the instrument transformer

Using a socket wrench, loosen lateral connecting nuts and fastening nuts.

Dismantle socket and remove receptacles D and E.

To the extent necessary, remove hemp cord.

Mount new instrument transformer on housing.

Fastening screws tightening torque: 4.1...5.5 Nm

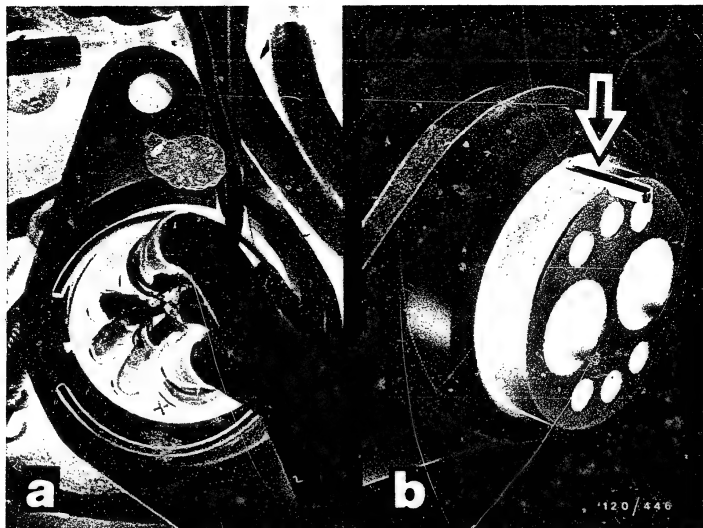
Connecting nuts tightening torque: 0.45...0.6 Nm

B-19

Dismantling and testing generator

Generator 0 122 700 ..(U3)





Insert receptacles in plug insert.
Introduce plug inserts together with plug base into socket. Slide parallel key into groove in socket (see picture b, arrow).

Re-affix hemp cord at the same point and secure with adhesive KK 57v9.

B20

Dismantling and testing generator

Generator 0 122 700 ..(U3)





10.4 Replacing the pole body (with winding)

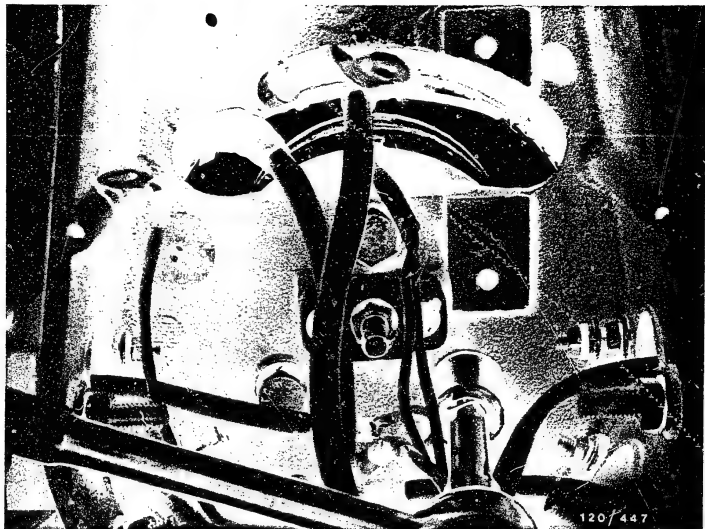
Remove socket and dismantle (remove receptacle C). To the extent necessary, remove hemp cord.

Loosen three pole body fastening screws (see picture). Carefully remove pole body from housing.

Note:

Before installing the pole body, spot-face the seating surfaces of the fastening screws with a 25 mm diameter milling cutter.





Carefully introduce new pole body into stator frame.
Screw down with new fastening screws (inscription 10 K).
Be sure to observe tightening torque 49 ... 65 Nm.

B22

Assembling the generator

Generator 0 122 700 ..(U3)





Insert receptacle C into plug inserts. Introduce plug inserts together with plug base into socket. Slide parallel key into groove in socket. Insert retainer.

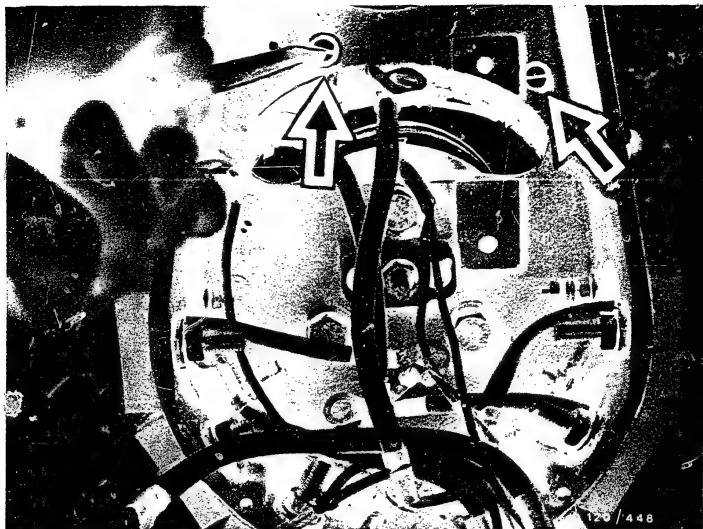
Mount socket assembly on generator housing.

Tightening torque 10 ... 13 Nm.

B23

Assembling the generator
Generator 0 122 700 ..(U3)





10.5 Replacing the stator frame with stator winding

Remove hemp cord.

Remove all heat sinks.

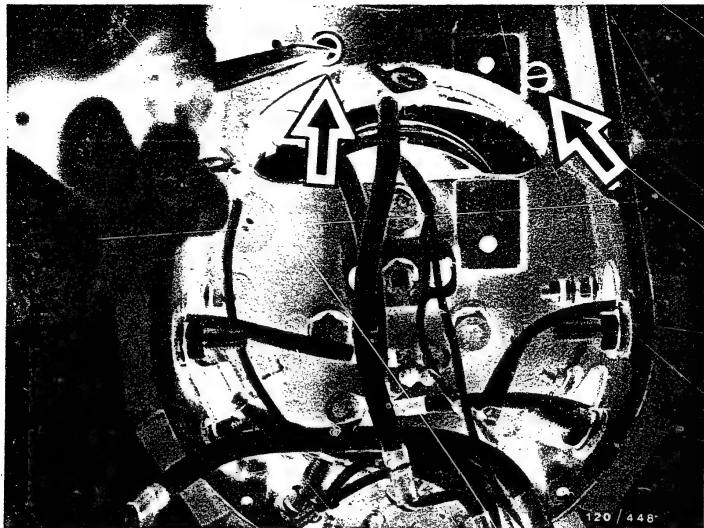
Unscrew instrument transformer.

Loosen stator frame fastening screws (see picture) and remove stator frame.

B24

Assembling the generator
Generator 0 122 700 ..(U3)





Carefully introduce new stator frame into connection housing and screw down.

Tightening torque 10 ... 14 Nm

Note:

Do not damage the phase ends.

Re-install instrument transformer and heat sink.

Tightening torque for instrument transformer fastening screws: 4.7 ... 5.5 Nm

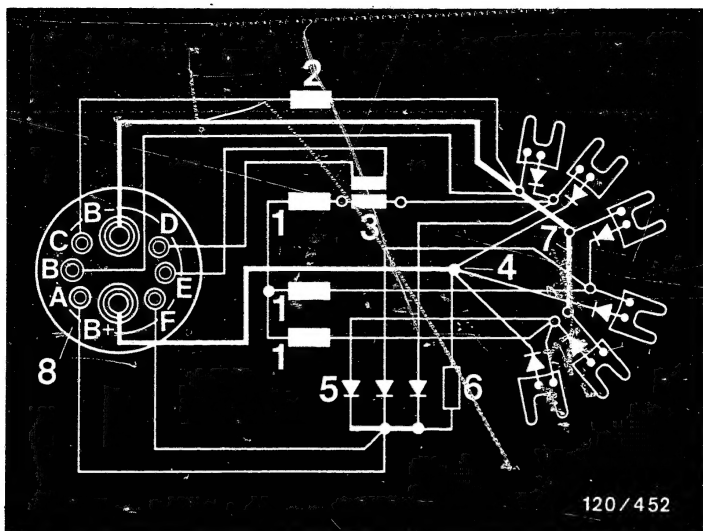
Tightening torque for heat sink fastening screws: 4.1 ... 5.5 Nm

C1

Assembling the generator

Generator 0 122 700 ..(U3)





120/452

- | | |
|------------------------------------|-------------------------------|
| 1 = Stator winding | 5 = Exciter diodes |
| 2 = Pole body (excitation winding) | 6 = Resistor |
| 3 = Instrument transformer | 7 = Bus bar (D-) |
| 4 = Positive terminal stud | 8 = 8-pin socket to regulator |

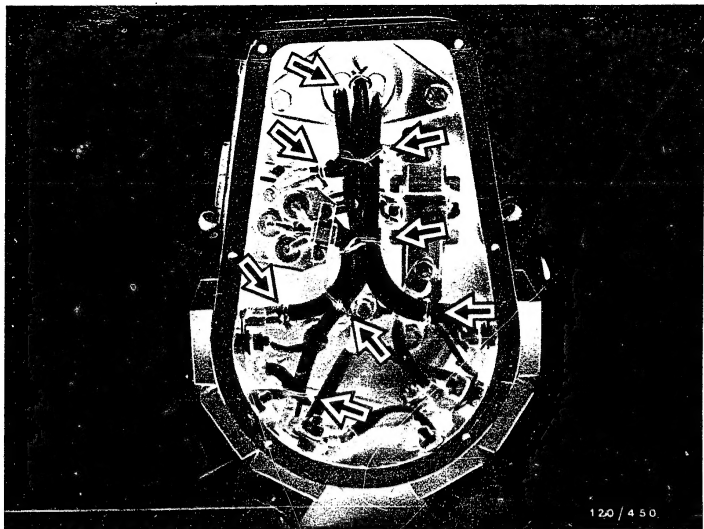
Wiring diagram for generators 0 122 700 002 and 003

After repairing the generator, connect all leads according to wiring diagram.

C3

Assembling the generator
Generator 0 122 700 ..(U3)





120 / 450

10.7 Securing the leads

After connecting all leads, re-affix missing hemp cord (see picture, arrows) and secure with adhesive KK 57v9.

It is also possible to use self-locking plastic bands. Mount closing cover. If necessary, use new gasket.

C4

Assembling the generator
Generator 0 122 700 ..(U3)



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4. Circuit diagram of generators.....	A 7
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7. Exploded views.....	A 16
8. Dismantling the generator and testing the parts.....	B 1
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10.3 Replacing the instrument transformer.....	B 19
10.4 Replacing the pole body (excitation winding).....	B 21
10.5 Replacing the stator frame with stator winding.....	B 24
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10.7 Securing the leads.....	C 4

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